Preliminary Decision-making in ESA Risk Assessments: A Case Study

Matt Kern, Waterborne Environmental
Scott Teed, Intrinsik Corporation

April 2019
CLA & RISE Regulatory Conference
To complicate is simple, to simplify is complicated…Everybody is able to complicate. Only a few can simplify.

—Bruno Munari
Guiding Principals

• A risk assessment must capture the gradient of potential risk across listed species & use patterns to be effective

• Screening tools are just that…they don’t define risk…but a screen should screen….

• Uncertainty does not equate to risk

• The complexity of endangered species assessments is simplified by pragmatism, deduction and scale

• Species and food protection both require practicality & effectiveness in risk assessment & risk management

• Giving the benefit of the doubt to species in a risk assessment should not undermine risk assessment effectiveness
Background

- Organophosphate case study (Malathion, Chlorpyrifos, Diazinon)
- Based on Interagency interim guidance (Agencies, 2013)
## Biological Evaluation (BE)

<table>
<thead>
<tr>
<th>Active</th>
<th>Percentage Species Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malathion / Chlorpyrifos</td>
<td>97</td>
</tr>
<tr>
<td>Diazinon</td>
<td>79</td>
</tr>
</tbody>
</table>

## Biological Opinion (BiOp)

<table>
<thead>
<tr>
<th>Active</th>
<th>Percentage Species Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malathion / Chlorpyrifos</td>
<td>49 (Jeopardy); 79% (Critical Habitat)</td>
</tr>
<tr>
<td>Diazinon</td>
<td>32 (Jeopardy); 36% (Critical Habitat)</td>
</tr>
</tbody>
</table>
Background

• Many opportunities for advancement & collaboration
  - Comments to EPA Biological Evaluation
    | Active                  | Docket Number          |
    |-------------------------|------------------------|
    | General (CLA Comments)  | EPA-HQ-OPP-2008- 0351-0063 |
    | Malathion               | EPA-HQ-OPP-2009- 0317-0059 |
    | Chlorpyrifos            | EPA-HQ-OPP-2008- 0850-0921 |
    | Diazinon                | EPA-HQ-OPP-2008- 0351-0075 |

• Comments to NMFS Biological Opinion
<table>
<thead>
<tr>
<th>Active</th>
<th>Docket Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Docket</td>
<td>EPA-HQ-OPP-2018-0141</td>
</tr>
</tbody>
</table>
Balancing Needs

Quality Science

Adequate Resources
• **Going forward: How can BEs and BiOp…..**
  
  - Effectively identify species/critical habitat of concern that are actually adversely impacted by pesticide use?
  - Optimize resources required for consultation?
  - Facilitate mitigations that are targeted to specific listed species?
  - Advance the role of stakeholders (including the applicants)?
Background

• CropLife America (CLA) has developed working groups to address several of the main scientific / technical issues identified in the BE and BiOp

• CLA Risk Documentation WG
  ▪ Capturing uncertainty

• CLA Framework WG
  ▪ Weight-of-Evidence approach – Pyrethroids (PWG)
  ▪ Scoping – Scoping an Endangered Species Risk Assessment

• Others, many of which are being discussed at the conference (e.g. conservation mitigation)
CLA Scoping - Case Study

- Demonstrate how the number of listed species & their critical habitat can be quickly and defensibly reduced
- Demonstrate opportunities for increase efficiency and reduced resource demands
CLA Scoping – Spatial

- Species Location
  - Existing Label Mitigation (e.g. Buffers)
  - Elevation, Seasonality
  - Simple Visual Use Site Clean Up
  - Coarse Distance (e.g. 1 KM)
  - Use Specific Distances (e.g. 50, 150, 250 M)

- Use Pattern
Species
Location

Use Pattern

Drift Curves for Aerial & Ground Applications to Labeled Crops
Morro Bay Kangaroo Rat

- No Orchard / Vineyard within Species Habitat
- 21 acres of Orchard / Vineyard within 1KM of Habitat
- After visual check all CDL pixels are misclassified
## CLA Scoping – Ecotoxicity

### Representative Toxicity
- Sensitive w/in Taxon
- Surrogate w/in Taxon
- Dietary preferences
- Acute vs. Chronic Interest

### Taxonomic Group

<table>
<thead>
<tr>
<th>Taxonomic Group</th>
<th>Early Finding</th>
<th>Species #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish &amp; Amphibians</td>
<td>Exposure significantly &lt; toxic response</td>
<td>101</td>
</tr>
<tr>
<td>Birds &amp; Reptiles</td>
<td>Exposure significantly &lt; toxic response</td>
<td>142</td>
</tr>
<tr>
<td>Wild Mammals</td>
<td>Exposure significantly &lt; toxic response</td>
<td>98</td>
</tr>
<tr>
<td>Plants</td>
<td>Exposure significantly &lt; toxic response</td>
<td>898</td>
</tr>
<tr>
<td>Terrestrial &amp; Aquatic Invertebrates</td>
<td>Some exposures &gt; toxic response</td>
<td>257</td>
</tr>
</tbody>
</table>
CLA Scoping – Exposure

Simple Scenarios

Screening Exposure Scenario
Species/Use Pattern Combination
Simple Habitat/Behavioral Adjustments
Acute vs. Chronic Interest
Informed by Usage
CLA Scoping

- Scoping is being done in the context of the problem formulation
- Effectiveness of scoping will vary from pesticide to pesticide (use pattern to use pattern)
- Factors that can be applied are variable
- Looking for ways to assist with resource constraints
  - Efficiency of the early assessment process
  - Leveraging data already available
  - Ways the registrant (applicant) may serve in a more active role in supplying/processing data that is helpful
Next Steps

• Targeted Completion: June 2019

• A report containing:
  ▪ An abbreviated problem formulation example
  ▪ Factors that may reduce the number of species/critical habitats that require evaluation
  ▪ Consider applicability to different chemistries (e.g. diamides, pyrethroids, neonicotinoids)
  ▪ Is there opportunity to build a knowledge base (species and chemistry) over time that could be readily applied in future assessments?
  ▪ Opportunity & justification in some cases to remove whole taxa from the assessment prior to conducting the evaluation phase of the framework (e.g. whales and pinnipeds)?
Thank You

Matt Kern (kernm@waterborne-env.com)
Scott Teed (steed@intrinsik.com)